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SUBJECT: Trip Report to Cyclohm Manufacturing Company on the Signal Corp Miniaturized Hand Generator

1. On the 11th of September 1953 the writer visited the subject company for the purpose of attending a demonstration of an experimental model of the miniaturized version of the GN-58 Generator that Cyclohm is developing for the Signal Corps. Mr. W.A. Ernst and Mr. W. Selitrennikoff were contacted, the former being the chief engineer and the latter, the engineer in charge of the project. Mr. Selitrennikoff gave a very thorough demonstration of this model, even going to the extent of disassembling it completely to study its construction.

2. This generator has been designed for maximum reliability in the field, and ease of production in the factory. The only tool needed to completely disassemble it is a screwdriver. Although a new, smaller case has been designed around it, it is so built that it is interchangeable as a basic unit, with the GN-58 case and the other models of the hand-cranked generators that are used in the other branches of the services. A large percentage of the weight saving has been achieved by generator redesign, and using magnesium castings in the gear reduction box. The voltage regulator is the same unit that is now used in the newer version of the GN-58, and Mr. Selitrennikoff stated that so far they had been unable to find anything any better, although they have had some trouble with these units, due to high rejection rates from the production line. has had the same experience. The reduction gear on the present version uses two stages of spur gearing and one stage of belt drive, the belt being the final drive for the generator. This belt drive is purely experimental, and no one seems to know how it is going to stand up under field conditions until an actual test is conducted. In the meantime, another model is to be constructed with a silent chain which will be slightly heavier but have a known performance, as this is the type of drive that has been proven out on the present GN-58. Aluminum wiring is used in the generator coils.

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3. A comparison of the four different styles of generators is given below in tabular form for convenience:

	<u>GN-58A</u>	<u>HG-1*</u>	<u>HG-3*</u>	<u>G-51*</u>
Wt. w/o Stand or Handles (lbs.)	23	13 3/4	16 1/2	16 1/4
Complete (lbs.)	27 3/4	18 1/16	21 5/8	
Vol. Case (cu. in.)	402	216	216	560
Vol. Complete Unit (cu. in.)	1008	635	784	Unknown at present. Depends on new stand and leg design.

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	<u>GN-58A</u>	<u>HG-1*</u>	<u>HG-3*</u>	<u>G-51*</u>
Drive Unit Wt. (lbs.)	2 13/16	2 1/8	4 1/4	4.050
Case Wt. (lbs.) w/Hardware	7 1/2	2 3/4	2 3/4	4.3
Wt. Bare Generator w/access.	12 1/2			8.5
Legs and Seat	2 15/16	3 3/4	4 1/2	

- *HG-1 - Nomenclature for [] design with Hydraulic Drive Unit. 50X1
- HG-3 - Nomenclature for [] design with planetary drive unit.
- G-51 - Nomenclature for Signal Corp Cyclohm design. Not absolutely sure this is correct as Cyclohm was not certain of the designation themselves.

4. As noted above, the basic stand and legs of the GN-58 are still used in the new Cyclohm design and it was gathered that these were to be redesigned as a next step. Since the same basic gear reduction is used in the new unit, the projected area of this unit is quite a bit larger than the tentative ERA designs, but at the same time it is probably simpler and easier to fabricate from a production standpoint. In all of these new developments, the gear reduction seems to be the main stumbling block to making a lighter and smaller unit. If the [] HG-1 unit proves itself with the hydraulic drive, it will undoubtedly be the smallest and lightest unit of all, but at this point it cannot be said that this drive is anything but strictly experimental. 50X1

5. At the present time, it seems that the Signal Corps design is slightly ahead of the [] design from the production standpoint. However, the Cyclohm generator has not yet been approved by the Signal Corps, and there is still some development work to be done before it is approved. From the standpoint of a smaller package, the [] design is much better although at the expense of simplicity and probably ease and cost of production. 50X1



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